

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A hybrid protein comprising ~~consisting essentially of~~:
an ABC transporter membrane protein comprising a ligand-binding portion of MRP1,
a spacer, ~~and~~
an ATP-sensitive potassium ion channel portion of Kir 6.2 ~~from the Kir family which~~
~~is not naturally coupled to said ABC transporter membrane protein, and, optionally,~~
a tag,

wherein said spacer is between said ABC transporter membrane protein and said
ATP-sensitive potassium channel, and

wherein said membrane protein, spacer, and potassium channel are functionally
coupled so that ligand binding to the ABC transporter membrane protein transduces a signal
to the potassium channel that produces an electrical signal.

Claim 2 (Cancelled).

Claim 3 (Previously Presented): The hybrid protein of claim 1, wherein said spacer
consists of six glycine or ten glutamine residues.

Claim 4 (Withdrawn): The hybrid protein of claim 1, which comprises a tag[[,]] to
facilitate the detection and/or the purification of said hybrid protein.

Claim 5 (Currently Amended): The hybrid protein of claim 1, which comprises SEQ
ID NO: 1

~~wherein said membrane protein is a receptor.~~

Claim 6 (Currently Amended): The hybrid protein of claim 5, which comprises SEQ
ID NO: 4

~~wherein said receptor is an hormone receptor.~~

Claim 7 (Currently Amended): The hybrid protein of claim 6, which comprises SEQ
ID NO: 6

~~wherein said hormone receptor is the M2 muscarinic receptor.~~

Claim 8 (Currently Amended): The hybrid protein of claim 6, which comprises SEQ
ID NO: 8

~~wherein said hormone receptor is the β 2 adrenergic receptor.~~

Claim 9-29 (Cancelled).

Claim 30 (Previously Presented): A polynucleotide encoding the hybrid protein of
claim 1.

Claim 31 (Cancelled)

Claim 32 (Previously Presented): A primer which is selected from the group
consisting of SEQ ID NOS: 13 to 16, 21, and 22.

Claim 33 (Previously Presented): A recombinant vector comprising the
polynucleotide of claim 30.

Claim 34 (Previously Presented): A host cell expressing the hybrid protein of claim 1.

Claim 35 (Previously Presented): An electrical sensor comprising:
the hybrid protein of claim 1, and
a membrane,
wherein said hybrid protein is incorporated in the membrane to form an electrical sensor.

Claim 36 (Withdrawn): A method for the screening of an agonist of a membrane protein, comprising:

- bringing a drug to test in contact with the electrical sensor of claim 35,
- measuring the resulting electrical signal by appropriate means, and
- selecting [[the]] a drug[[s]] which induces an electrical signal.

Claim 37 (Withdrawn): A method for the screening of an antagonist of a membrane protein, comprising:

- bringing a drug to test in contact with the electrical sensor of claim 35, and with a ligand/substrate of said membrane protein,
- measuring the resulting electrical signal by appropriate means, and
- selecting [[the]] a drug[[s]] which blocks the electrical signal induced by said ligand/substrate.

Claim 38 (Withdrawn): The method of claim 36, wherein said electrical sensor comprises a hybrid protein comprising MRP1 [[, to]] and binds to ~~screen~~ anticancer drugs or multidrug reversing agents.

Claim 39 (Withdrawn): The method of claim 37, wherein said electrical sensor comprises a hybrid protein comprising MRP1 [[to]] and binds to ~~screen~~ anticancer drugs or multidrug reversing agents.

Claims 40-41 (Cancelled)

Claim 42 (Withdrawn): A method for the detection of a contaminant or pollutant ~~contaminant/pollutant~~, comprising:

- bringing a sample to be tested in contact with the electrical sensor of claim 35,
- measuring the resulting electrical signal ~~by appropriate means~~, and
- detecting the presence of said contaminant or pollutant ~~contaminant/pollutant~~ in said sample by correlating the electrical signal produced with the presence of said contaminant or pollutant.

Claim 43 (Cancelled)

Claim 44 (Withdrawn): A method for assaying the activity of a membrane protein, comprising:

- bringing a ligand/substrate of said membrane protein in contact with the electrical sensor of claim 35, and

- measuring the resulting electrical signal ~~by appropriate means~~.

Claim 45 (Previously Presented): A kit for the screening of an agonist or antagonist, or both, of a membrane protein comprising the electrical sensor of claim 35.

Claim 46 (Previously Presented): A kit for the detection of a contaminant or a pollutant, or both, comprising the electrical sensor of claim 35.